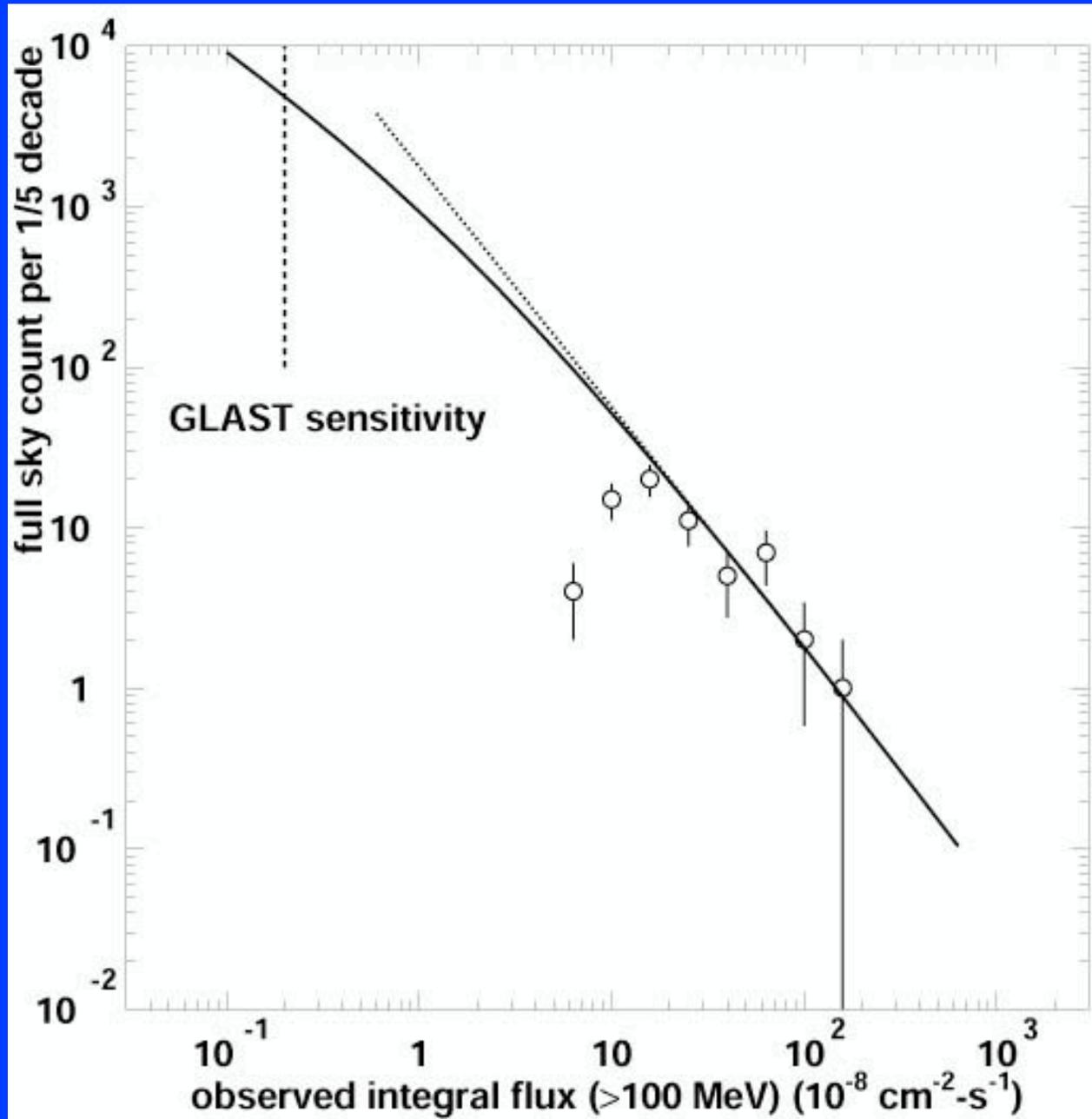


Simulating the Diffuse Emission

- The sum of yet-unresolvable sources
- May contain a truly diffuse component
- Model requires and uses a $\log N/\log S$ characteristic
- $\log N/\log S$ linearity cannot continue (“white sky” issue).



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Sum of unresolved sources:

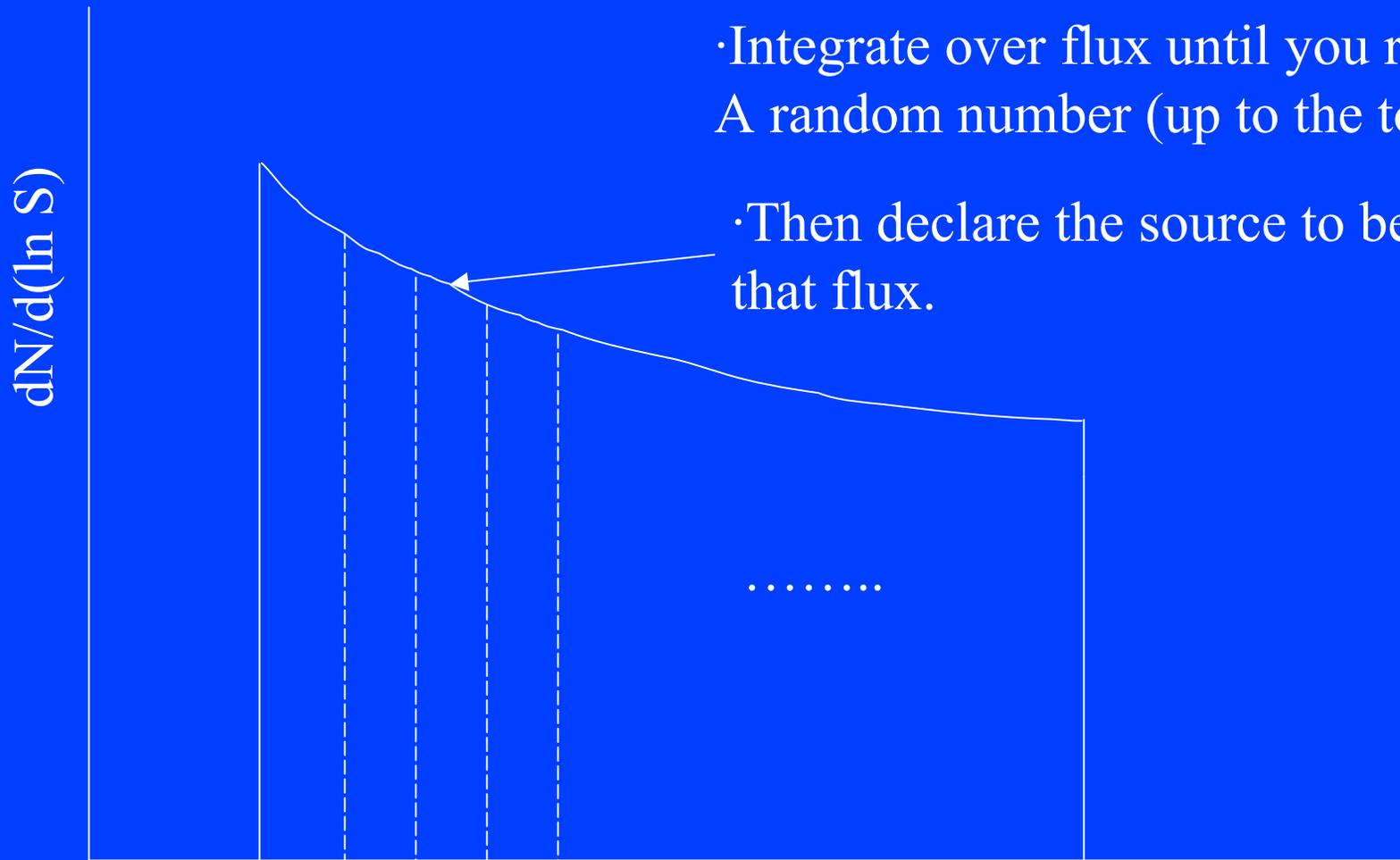
- Need for modeling this kind of emission (vs. true diffuse) so that we can attempt to differentiate between the resultant data.
- GLEAM should be able to generate “a source” which contains the sum of internally-declared sources.
- Our design is capable of simulating diffuse background as well as sources constructed according to $\log N/\log S$.

Model Design:

- We declare a $\log N/\log S$ characteristic, to be added as discrete point sources
- The simulation calculates the “total background flux”, and holds a catalog of sources which have been declared.
- Each time another photon is needed, the simulation determines if it should come from a known source, or if another needs to be created.

Adding sources:

- Integrate over flux until you reach A random number (up to the total).
- Then declare the source to be at that flux.

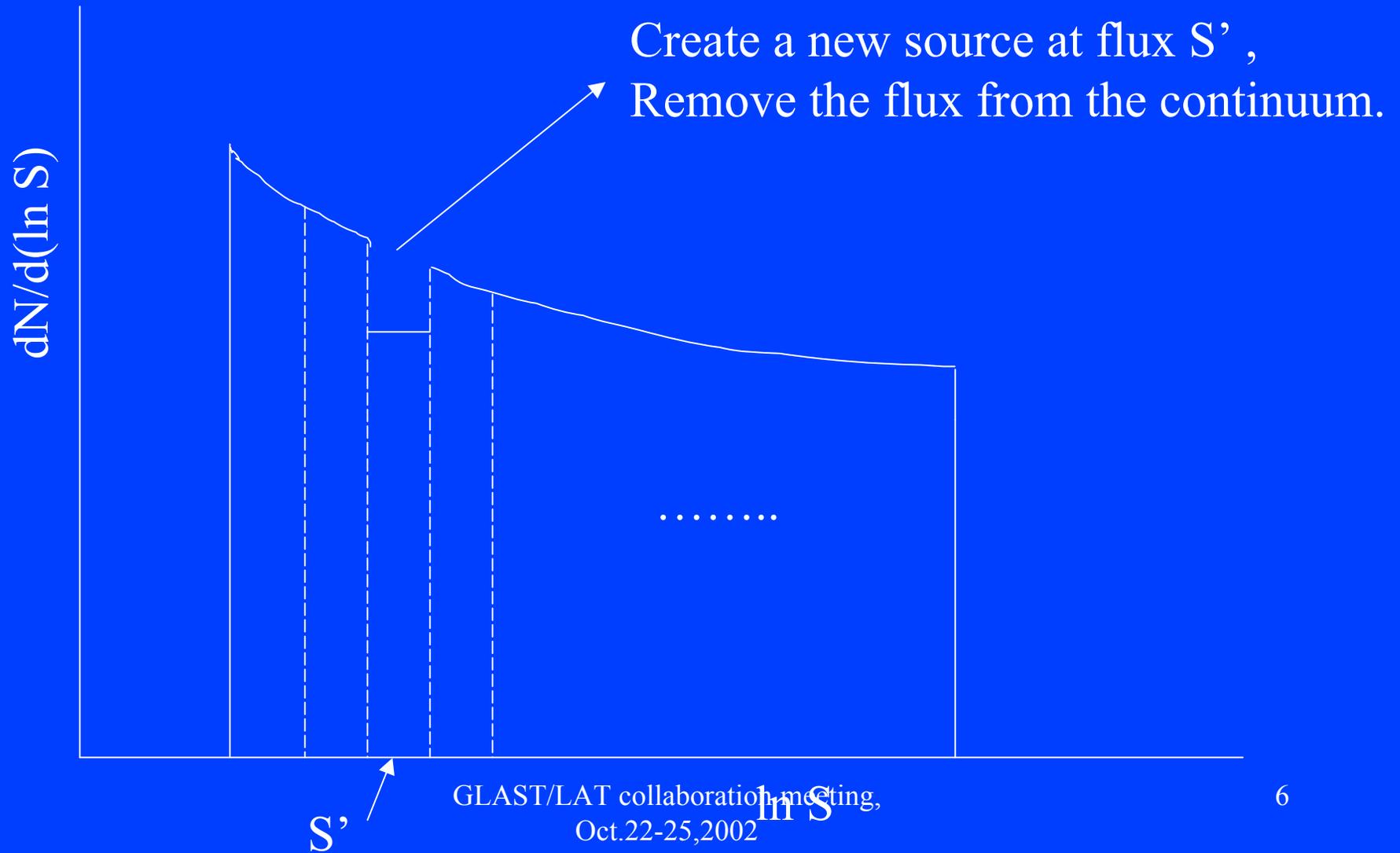


Effective cutoff

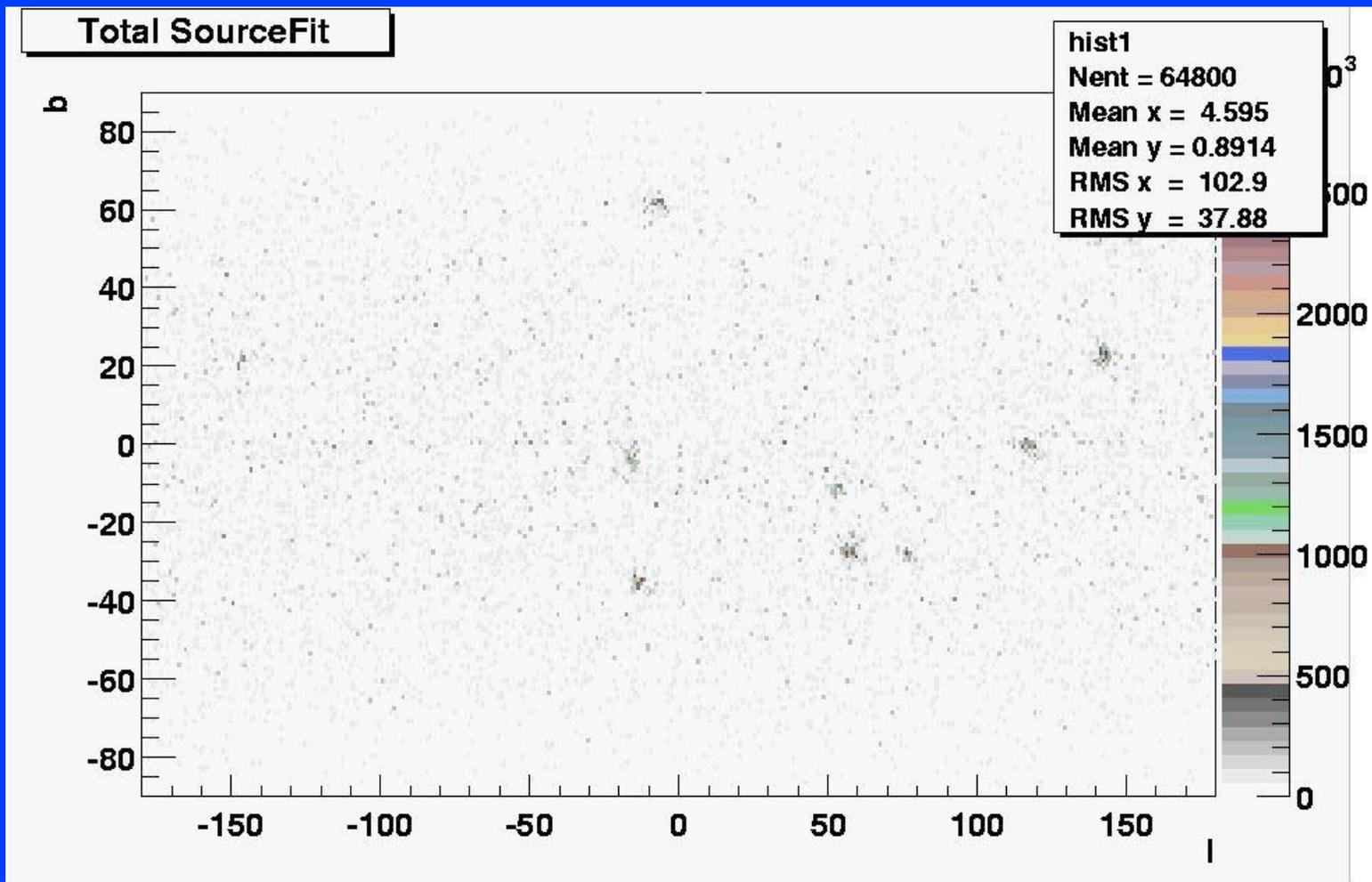
S'

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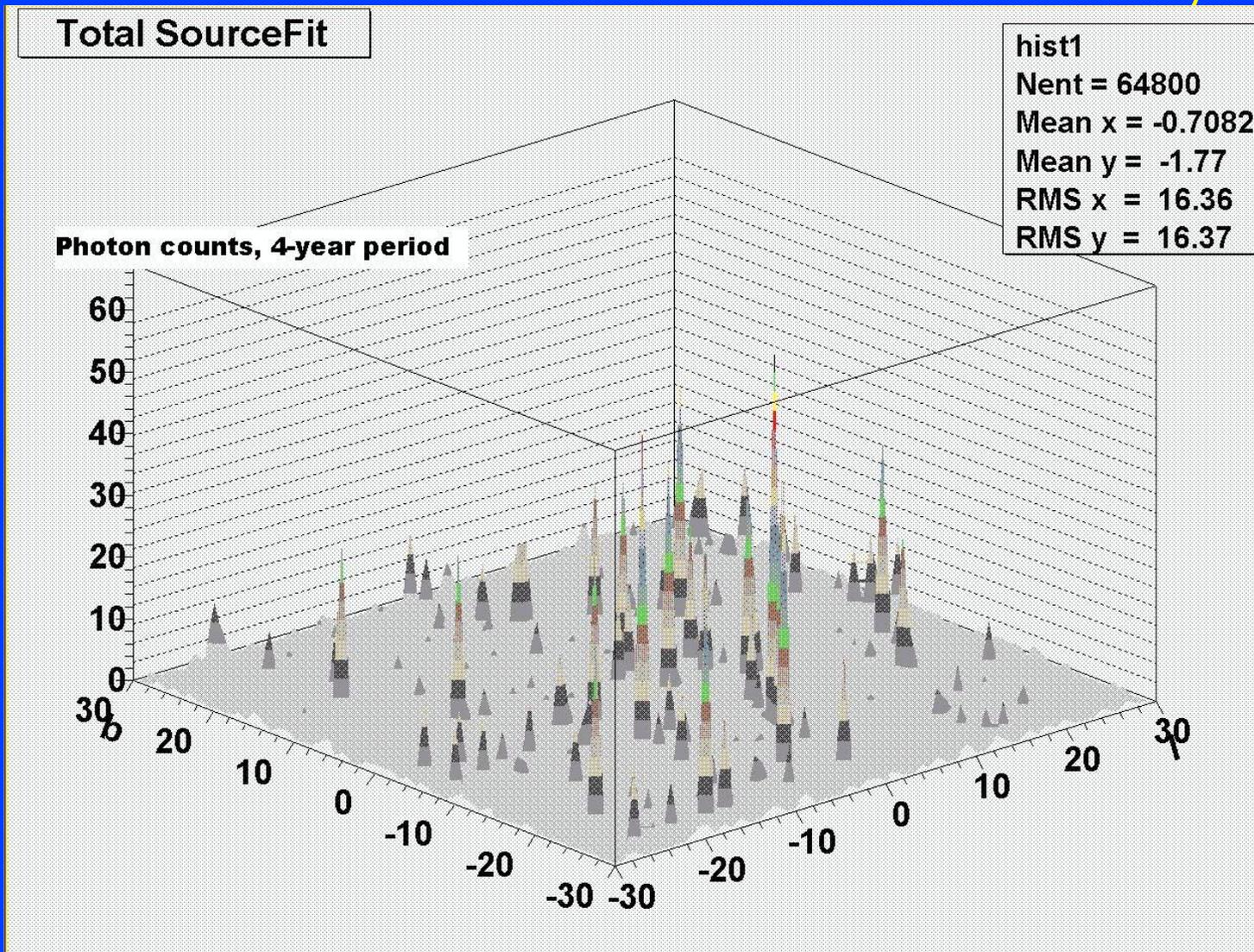
Adding sources 2:



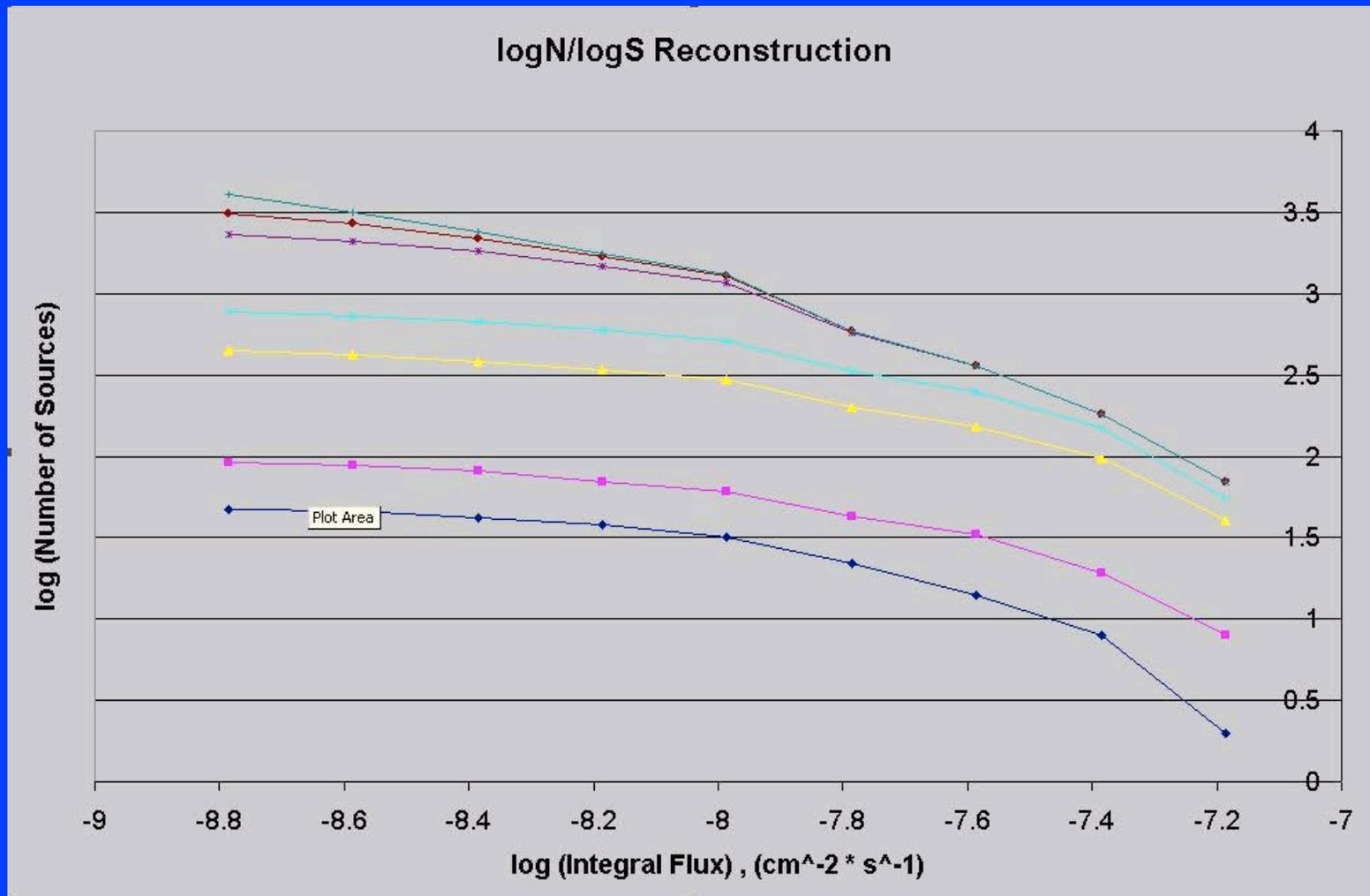
Exaggerated sources against background:



Constructed source intensity



Algorithm fills in logN/logS characteristic



Future Considerations

- Energy spectrum (currently very simple).
- $\log N/\log S$ does not contain information about flaring/quiescent sources – Clearly, it is something the generation infrastructure should know about.
- Goal: produce data sets which mimic the extragalactic radiation, as well as truly diffuse radiation, and a mixture, for further analysis.